CLAIMS

1.   A responsive load device adapted to be connected to
an electric load which consumes intermittent or variable
5   electric energy to maintain a variable between upper and
lower limits of the variable, the upper and lower limits
of the variable being derived from and defined around a
setpoint of the variable, the apparatus comprising:
        means for receiving an input indicative of the
10   frequency of the mains power supplied to the load from a
grid; and
        means responsive thereto to determine a level of stress
under which the grid is operating and to control power
consumption by said load in accordance with the
15   determined stress level and to prevent the setpoint
being increased when a generation shortage grid stress
level exceeds a first maximum threshold value and/or
being decreased when a demand shortage grid stress level
is below a first minimum threshold value.
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2. The device of claim 1, wherein the device is
responsive to the system generation shortage grid stress
level exceeding a second maximum threshold value, higher
than the first, to prevent the load consuming power.
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3. The device of claim 1 or 2, wherein the device is
responsive to the demand shortage grid stress level
being below a second minimum threshold value, lower than
the first, to increase the power consumption of the load
30   to a maximum.

4.   The device of any preceding claim, further
comprising:
        responsive load control apparatus adapted to be
35   connected to the electric load which consumes
intermittent or variable electric energy in order to

maintain a variable within the controlled upper and
lower limits;

means for controlling the power consumed by the
load in response to the frequency of the mains power
5 supplied to the system and the value of said variable;
means for detecting the frequency of mains power
supplied to the electric load and means for detecting
the value of the variable of said load; means for
determining the level of instantaneous stress on the
10 grid based on the detected frequency; and wherein said
means for controlling the power consumed comprises:

means for comparing the detected instantaneous
stress level with predetermined upper and lower
instantaneous stress level thresholds,
15 means for comparing said variable with
predetermined upper and lower thresholds,

means for switching of f or reducing power supply
to the load when said system instantaneous stress level
drops below said lower instantaneous stress level limit
20 and said variable is within the range defined by the
upper and lower thresholds, and

means for switching on or increasing power supplied
to the load when said instantaneous stress level is
above the upper instantaneous stress level limit and
25 said variable is within the range defined by the upper
and lower thresholds; and further comprising:

means adapted to automatically optimise or adjust
the predetermined threshold values.

30 5. A method for controlling an electric load which
receives electrical power from a grid, said electric
load consuming intermittent or variable electric energy
to maintain a variable between upper and lower limits of
the variable, wherein the upper and lower limits are
35 derived from and defined around a setpoint of the
variable, said method comprising the steps of:

determining a stress level of the grid from a
frequency of the electrical power received by the
electric load; and

preventing an increase of the setpoint when the
5   determined stress level exceeds the predetermined
maximum threshold and/or preventing a decrease of the
setpoint when the determined stress level falls below
the predetermined minimum threshold.

10   6.   The method of claim 5, further comprising the step
of:

preventing the electric load from consuming power
when the stress level of the grid exceeds a second
maximum threshold, greater than the first.

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7.   The method of claim 5 or 6, further comprising the
step of:

maximising the power consumed by the electric load
when the determined stress level of the grid falls below
20   a second minimum threshold, less than the first.